

REMARKS

In response to a Final Official Action, Applicants are filing a Request for Continued Examination pursuant to 37 C.F.R. § 1.114. At the time of the Final Office Action, claims 1-19 were pending. In this Preliminary Amendment, no claims are canceled or added, but claims 1, 6, 12 and 16 are amended. Accordingly, claims 1-19 are currently pending. Reconsideration of the rejections and allowance of the pending claims are respectfully requested.

Objection to the Drawings

The Examiner objected to the drawings under 37 C.F.R. § 1.83(a) as not showing various features recited in claims 7-10 and 17-19. While Applicants do not necessarily agree with the Examiner's objection, Applicants have amended the specification and the figures to conform to the original claims, as suggested by the Examiner. Specifically, Applicants have amended Figs. 1 and 3, and the associated paragraphs, to illustrate and describe the subject matter recited in claims 7-10 and 17-19. As the revisions merely clarify the originally claimed subject matter, the amendments to these paragraphs and the drawings do not add any new matter. Applicants respectfully request entry of these amendments and withdrawal of the Examiner's objections. Further, a formal copy of each of Figs. 1-3, has been included. There are no amendments to Fig. 2, other than the formalization of the figure. Each figure is marked as a "Replacement Sheet" and is attached hereto as Appendix A.

Primary Rejection under 35 U.S.C. § 103

The Examiner rejected claims 1, 6, 12 and 16 under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 5,802,269 to Poisner et al. (herein referred to as "the Poisner reference") in view of U.S. Patent No. 6,272,601 to Nunez et al. (herein referred to as

“the Nunez reference”). In the present response, Applicants have amended claim 1, 6, 12 and 16 to clarify the claimed subject matter. Applicants respectfully assert that the amended claims are not rendered obvious by the Poisner and Nunez references, either alone or in combination. Specifically, with regard to the independent claims, the Examiner stated:

In reference to claim 1, Poisner teaches a system comprising: a processor (See Figure 2 Number 31); a main memory operably coupled to the processor (See Figure 2 Number 35); a cache memory operably coupled to the processor (See Figure 2 Number 39); and a bridge, which is equivalent to a host controller, coupled between the processor and the main memory (See Figure 2 Number 33); the host controller comprising: a memory controller operably coupled to the main memory (See column 3 Lines 61-63); a processor controller operably coupled to the processor (See column 3 Lines 64-67); and a coherency controller operably coupled to the cache memory (See column 3 Lines 61-63); Poisner further teaches that the bridge facilitates communications between the processor, the main memory, and the cache memory (See column 3 Lines 59-67), and thus it inherently includes an internal bus structure configured to couple each of the memory controller, the processor controller, and the coherency controller to each other. Poisner does not teach wherein each of the individual buses comprises a unidirectional bus configured to transmit only one signal type. Nunez teaches the use of an interconnect comprised of buses that are unidirectional and that carry only one type of signal, namely, address or data (See column 8 Lines 1-2);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Poisner with the unidirectional interconnect buses of Nunez, resulting in the invention of Claim 1, in order to improve performance by eliminating the need for buffers and tri-state drivers typically associated with bi-directional buses (See column 8 Lines 1-4 of Nunez).

In reference to Claim 12, Poisner teaches a bridge containing first and second controllers that communicate with each other and thus inherently has an internal bus structure comprising a plurality of individual buses (See column 3 Lines 59-67). Poisner does not teach that the individual buses comprise a unidirectional bus configured to transmit only one signal type. Nunez teaches the use of an interconnect comprised of buses that are unidirectional and that carry only one type of signal, namely, address or data (See column 8 Lines 1-2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the device of Poisner with the unidirectional interconnect buses of Nunez, resulting in the invention of claim 12, in order to improve performance by eliminating the need for buffers and

tri-state drivers typically associated with bi-directional buses (See column 8 Lines 1-4 of Nunez).

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (B.P.A.I. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

Although Applicants do not necessarily agree with the Examiner's rejections for the reasons presented in the previous response, Applicants have amended the claims to further clarify the claimed subject matter. Applicants respectfully submit that the present rejections are moot in view of the amended claims.

Specifically, the Poisner and Nunez references do not disclose or suggest an internal bus structure comprising a plurality of individual buses, wherein each of the individual buses comprises "a unidirectional bus configured to transmit only one signal type of a plurality of

signal types that are utilized to process a particular request operation,” as recited in independent claims 1 and 12. Hence, each of the independent claims 1 and 12 recite subject matter that is not disclosed or suggested by the Poisner and Nunez references, alone or in combination.

The Examiner admitted that “Poisner does not teach wherein each of the individual buses comprise a unidirectional bus configured to transmit only one signal type.” *See* Official Action mailed September 29, 2004, page 3. Indeed, the Poisner reference simply discloses a system that includes a bridge 33 coupled to a cache 39, a central processing unit (CPU) 31, and a main memory 35, and operates in a DDMA environment. *See id.* at Fig. 1; col. 3, lines 59-67. Poisner is completely silent with regard to the *internal bus structure*, and thus does not disclose a unidirectional bus configured to transmit *only one signal type of a plurality of signal types that are utilized to process a particular request operation* in a host controller. Thus, as recognized by the Examiner, the Poisner reference does not teach or disclose the claimed subject matter.

Further, the Nunez reference does cure the deficiencies of the Poisner reference, with regard to the recited subject matter. The Nunez reference discloses the use of unidirectional address and data buses between a set of processors and a memory subsystem driven by a single arbitrator. *See id.* at col. 1, lines 54-58. This provides a simplified architecture that enables a high degree of subsystem operation pipelining to improve system performance. *See id.* at col. 1, lines 61-63. The Examiner correlated “address” and “data” as the recited “signal types.”

As amended, claims 1 and 12 recite an internal bus structure, “wherein the internal bus structure is configured to transmit a request comprising a plurality of ordered transactions each having a unique signal type, and wherein each of the individual buses comprises a unidirectional bus configured to transmit only one signal type.” Accordingly, the recited internal bus structure is configured to transmit a request comprising a number of ordered transactions or exchanges. Each of the transactions or exchanges is associated with a single request. Further each of the transactions or exchanges comprises a unique signal type. As presently recited, each of the individual buses of the internal bus structure is configured to transmit only one signal type, and thus, one of the particular transactions or exchanges associated with each request. Clearly, the address and data signals cannot be fairly correlated with ordered transactions associated with a request, wherein each of the ordered transactions comprises a unique signal type, presently recited. Thus, because Nunez does not disclose or suggest the claimed subject matter, it fails to cure the deficiencies of the Poisner reference. Accordingly, the recited features in independent claims 1 and 12 cannot be rendered obvious by the Poisner and Nunez references.

Because the cited references do not disclose all the recited features of independent claims 1 and 12, the references cannot render the claimed subject matter obvious. Therefore, Applicants respectfully request withdrawal of the Examiner’s rejection and allowance of claims 1, 6, 12 and 16.

Additional Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 2-5 and 13-15 under 35 U.S.C. § 103(a) as being unpatentable over Poisner in view Nunez and Kosaraju (U.S. Patent Application Publication No. 2002/0073261). The Examiner rejected claims 7, 8, 17 and 18 under 35 U.S.C. § 103(a)

as being unpatentable over Poisner in view of Nunez and Hanaoka et al. (U.S. Patent No. 6,584,103). The Examiner rejected claims 9 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Poisner in view of Nunez, Hanaoka, and Ketseoglou et al. (U.S. Patent No. 6,130,886). The Examiner rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Poisner in view of Nunez and Miyao et al. (U.S. Patent No. 5,901,281). Finally, the Examiner rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Poisner in view of Nunez and Deshpande et al. (U.S. Patent No. 6,587,930). However, despite these various combinations, Applicants respectfully assert that the cited references, alone or in combination, fail to render the claimed subject matter obvious.

Again, although Applicants do not agree with the rejections for at least the reasons presented in the response to Official Action mailed March 26, 2004, Applicants submit that these rejections are moot in view of the amended claims. In addition, each of the claims 2-5, 7-11, 13-15 and 17-19 depend from independent base claims that are clearly patentable over the Poisner and Nunez references, as discussed above. It is noted that these additional references do not cure the deficiencies of the primary references.

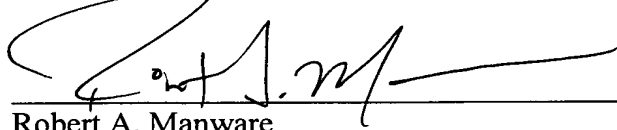
Because the cited references fail to disclose all of the claimed subject matter, even if otherwise they could be combined, the references cannot be combined to establish a *prima facie* case of obviousness. Therefore, Applicants respectfully request withdrawal of the rejections and allowance of claims 2-5, 7-11, 13-15 and 17-19.

Conclusion

In view of the remarks set forth above, Applicants respectfully request reconsideration and allowance of all pending claims 1-19. If the Examiner believes that a telephonic

interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Robert A. Manware', is written over a horizontal line.

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Date: December 23, 2004

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IN THE DRAWINGS

Please replace the originally filed drawings with the drawings attached hereto as Appendix A. Appendix A includes a formal copy of all figures, which are each labeled as a “Replacement Sheet” and include the Figures 1-3.